DOCUMENT RESUME

ED 207 263 EA 014 131

AUTHOR Yin, Robert; And Others
TITLE Quality Control and Product Information Systems. An Interim Report on Implementation, Use, and Effect in the R&D Utilization Program. Linking R&D with Schools.
INSTITUTION Abt Associates, Inc., Cambridge, Mass.
SPONS AGENCY National Inst. of Education (ED), Washington, D.C. Dissemination and Improvement of Practice Program.
PUB DATE Oct 80
CONTRACT 400-78-0002
NOTE 79p.; Figures 1 and 2 may reproduce poorly due to small print. For related documents, see ED 188 314, ED 192 437, ED 196 134, EA 014 118-130 and EA 014 167.

EDRS PRICE MF01/PC04 Plus Postage.
DESCRIPTORS Adoption (Ideas); Educational Improvement; Educational Innovation; Educational Needs; Elementary Secondary Education; *Information Dissemination; *Instructional Materials; *Program Evaluation; *Research Utilization; Tables (Data); *Validity
IDENTIFIERS *Research and Development Utilization Program

ABSTRACT

As part of a broader study of the National Institute of Education's Research and Development Utilization (RDU) program, this report focuses on the process by which collections of products (the knowledge base) were developed to serve clients' needs, the types of products included for dissemination, and the types chosen by sites. The seven project sites included in the RDU program were first instructed to organize a knowledge base. All projects chose one or both of the recommended problem areas, basic skills and career education. Products were evaluated more rigorously at some project sites than at others and the process of product validation elicited substantial controversy during the program. The project sites then provided assistance to school sites in matching needs to specific products and adopting such products. All schools finally did adopt some product, though 50 to 60 percent of all the adoptions may have involved nonvalidated materials. Because of the problem in quality control, it is suggested that a larger pool of acceptable educational products and clearer operational guidance are needed. The slippage from validated to nonvalidated products can also be partially attributed to the tension between the technology-oriented and user-oriented objectives of the RDU program. (Author/WD)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED207263

LINKING R & D WITH SCHOOLS

QUALITY CONTROL AND PRODUCT INFORMATION SYSTEMS

An Interim Report on Implementation, Use, and Effects in the R&D Utilization Program

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☐ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

ROBERT K. YIN

MARGARET GWALTNEY

KAREN SEASHORE LOUIS

With the assistance of:

Sheila Rosenblum

EA 014 131

October, 1980

This report was prepared with support from Contract 400-78-0002 with the National Institute of Education. While NIE encourages dissemination of findings from research funded by the agency, this report does not necessarily represent the opinions of the agency.

TABLE OF CONTENTS

Page

PREFACE i

CHAPTER I: INTRODUCTION 1

The RDU Program 1
The Role of the RDU Program with the Broader NIE Mandate 2
The Use of Educational Products in the RDU Program 3

CHAPTER II: OPERATING THE KNOWLEDGE BASE 6

Organizational Structure of the Knowledge Base 6
Staffing Patterns and Level of Effort 6
Contents of the Knowledge Base 9
Acquisition of Products for the Knowledge Base 12
Search Procedure 12
Validation Procedure 14
Results of Knowledge Base Acquisition 18

CHAPTER III: MATCHING SITE NEEDS WITH AVAILABLE PRODUCTS ... 24

Initial Presentation of Candidate Products for Adoption 25
Modes of Communication 25
Size of the Candidate Array 27
Screening of Candidate Products 27
Final Adoption Patterns 30

CHAPTER IV: DELIVERING EDUCATIONAL PRODUCTS TO SCHOOLS: CONCLUSIONS AND FUTURE PROSPECTS 43

The Need for More Educational Products 43
The Need for Clearer Definitions 45
Normal Slippage Between Intent and Implementation 48
Summary 55

REFERENCES 58

LIST OF TABLES AND FIGURES

		Page
Table 1	Staffing and Level of Effort for Each Project's Knowledge Base	7
Table 2	Documents Produced by the Knowledge Bases, by Project	10
Figure 1	An Example of a Product Description	11
Table 3	Number of Knowledge Base Products in Various Curriculum Areas, by Project	13
Table 4	Number of Products From Either NDN or NIE Catalogs, by Knowledge Base	19
Figure 2	Knowledge Base Acquisition Procedures, by Project	21
Table 5	Proportion of Non-R&D Products in Seven Knowledge Bases	23
Table 6	Product Adoptions for Each RDU Project, by Spring 1979	31
Table 7	Product Adoption Patterns, by Spring 1979 (six RDU projects)	40
Table 8	Product Adoption Patterns for Each RDU Project, by Spring 1979	41
Figure 3	Types of Educational Products by Source and Validation Status	46
Figure 4	Five Phases in the Implementation of a Federal Program Intended to Affect Local Practice	49
Figure 5	Types of Change Between Intent and Implementation	51

PREFACE

This report is one of several that is being written as part of Abt Associates' broader study of the National Institute of Education's Research and Development Utilization (RDU) program. The report has a relatively narrow focus: the process by which pools of products (referred to in this report as the "knowledge base") were developed to serve clients' needs, the types of products that were included for dissemination, and the types that were chosen by sites. Other reports will analyze other aspects of the program: the problem-solving process that schools underwent in selecting a product to meet their needs, the management of the RDU projects and the linkage systems that were established, the training and support of the linking agents, the role of NIE in designing and monitoring the RDU program, and the impacts of the RDU program at the site level.

The RDU Program

In June of 1976, the National Institute of Education (NIE) established the Research and Development Utilization program as a new dissemination effort to help schools clarify and solve local problems. The RDU program emphasized a research-based, rational approach to local school improvement through the use of existing, validated products of federally funded research and development activities. This program was designed to achieve three major objectives:

- to help schools alleviate specific, locally defined problems in the areas of basic skills and career education;
- to help school and community personnel learn about the products of educational research and development; and
- to increase understanding of how the local program improvement process can be better managed and become more effective.

The RDU program is unusual among federally funded dissemination strategies because it is equally concerned with the dissemination and use of R&D products and with the development of local organizational capabilities to solve problems. Other federal programs have tended to concentrate on either product dissemination or local capacity building.

The RDU Strategy

The core of the RDU approach was to provide each participating site with assistance in following the sequence of activities listed below:

- identification of a problem or set of problems;
- examination of alternative solutions to the problem, focusing particularly on the products of educational R&D;
- selection of a specific solution considered to be appropriate to alleviate the problem;
- implementation of the solution; and
- evaluation and incorporation of both the solution and the problem-solving process.

The service delivery system of the RDU program operated through seven projects, each of which coordinated a network of organizations and individuals involved in the provision of services and information to local school districts. As a whole, the seven projects operated in 20 states and served over 300 schools or school districts over a three-year period (1976-1979). A "linking agent" (in many cases, former teachers or school administrators), assigned by the project, coordinated the services provided to the local schools and school districts and helped guide the local school personnel in a school improvement process. Each project supported two or more linkers, but their roles varied among projects. Most operated out of an intermediate service agency, or a state education agency, and each served a specific set of local schools or school districts. The range of a linker's possible roles included facilitating the decision-making process by clarifying goals and providing leadership, and mediating among autonomous and sometimes competing organizations whose resources and services needed to be coordinated. The seven projects were regionally distributed and involved the following:

The Northwest Reading Consortium (NRC), under the overall direction of the Washington State Education Agency, operated as a consortium of four states in the Northwest: Washington, Oregon, Alaska, and Idaho. The project built upon the existing Right to Read program in the four states. (The Right to Read Program is a nationwide program sponsored by the U.S. Office of Education to eliminate functional illiteracy.) The Northwest Regional Educational Laboratory was also an affiliate, providing training to project staff and support in the development of a pool of R&D products.

The Georgia State Department of Education operated a project which provided funds and services to all participating school districts located in three Cooperative Educational Service Areas. The emphasis of the RDU project in Georgia was on building local school district capacities in the early stages of planning and program selection. The implementation phase of the problem-solving model was subsequently carried out with federal funds available through the state department of education under Title IV-C of the Elementary and Secondary Education Act and with other state funds.

The Pennsylvania Department of Education developed and coordinated a school improvement process which involved the participation and resources of several organizations: Research for Better Schools (a regional education lab), Research and Information Services for Education (a state-wide information and dissemination service), the Learning Research and Development Center at the University of Pittsburgh, and the state's Intermediate Units. The project's problem-solving model, which was developed by the participating resource agencies, involved numerous defined steps, including a series of formal training sessions in problem solving at the school sites.

The National Education Association (NEA) operated its project in collaboration with the state education agencies and corresponding state education associations in 12 states: Alabama, California, Iowa, Massachusetts, Michigan, Minnesota, Ohio, Pennsylvania, Tennessee, Washington, Wisconsin, and Wyoming. In contrast to the other RDU projects, this project focused exclusively on the improvement of teacher inservice education. Services were provided by two linking agents in each state who trained local staff.

The Florida Department of Education served as prime contractor in a linkage system which also involved the state universities (especially Florida State and the University of Florida), and eight of the state's Teacher Education Centers (TECs). An important feature of this project is that training in group problem-solving techniques was provided not only to the linking agent (one of whom was located in each TEC), but also to selected local school staff. The school site facilitators, with the help of the linking agents, were responsible for leading the staff at their sites through the entire problem-solving process.

The Career Education Dissemination Project of the Michigan Department of Education was designed to help local sites meet the requirements of state career education legislation passed in 1974. One of the project's major objectives was to develop a permanent dissemination and diffusion system in career education. Because of this emphasis on permanence, the project attempted to work with existing structures and personnel in the state's Intermediate School Districts rather than build new ones. The primary strategy was to provide direct training and programmatic funds to coordinators who were staff members at local sites.

The NETWORK, a non-profit research and service organization in Andover, Mass. coordinated a consortium of agencies in six states: in Minnesota, the agency involved was a teacher center associated with a university; in Washington, a local school district; in California, a regional education laboratory sponsored by NIE; in Kansas, an independent state-wide education diffusion organization; in Connecticut, a cooperative service agency supported by local school districts; and in Massachusetts, a division of The NETWORK itself. This project was formed mainly to improve the utilization of R&D products in reading in selected local schools. The linking agents provided assistance to the local sites, while a considerable amount of technical assistance and support was provided to the linking agents by the project office in Andover.

Some common features ran throughout the seven projects and in the structure of support services provided to local schools:

- the operation of a project headquarters to coordinate the services supplied to schools;
- the development and administration of a knowledge base composed of educational research and development products;
- the development of training and technical assistance components to serve the project's linking agents and/or school staff; and
- the development of project evaluation and research activities to facilitate local self-evaluation by the school sites.

The Study of the RDU Program

In November 1977 Abt Associates Inc., a social science research firm based in Cambridge, Massachusetts, was contracted to conduct a study of the RDU program. The study addresses six major issues:

- how relationships are managed between various agencies which have the expertise and resources to help local schools solve problems;
- to what degree an intervention program such as RDU can help schools overcome barriers to successful problem solving (such as limited access to information or lack of planning, skills, etc.);
- to what degree the products of educational R&D are relevant to the problems and contexts of local schools;
- what the impact is of the products of educational R&D once they have been adopted and implemented;
- what factors contribute to the institutionalization of the RDU approach within a variety of organizations; and
- how linking agents coordinate the flow of external resources to schools, and whether this helps the schools solve problems.

All of the seven projects have completed the federally supported service delivery plan of their activities. However, the research efforts by Abt Associates will continue until early in 1981. The lessons that can be learned from the activities and outcomes of the program will have important implications for the design and operation of dissemination programs in education, as well as for the design and management of future federal, state, and local efforts to improve schools.

We would like to acknowledge the assistance of our colleagues on the RDU study, who have provided us with insights, data, and moral support. These include: Sheila Rosenblum, Kent Chabotar, Diane Kell, Greg Spencer, Jim Molitor, and Thea Moskat. Earlier drafts of this report also benefited from comments made by Nancy Ames, Robert Dentler, and Sam D. Sieber. NIE staff members, including our project officer, John Egermeier, Michael Kane, Ward Mason, and Naida Bagenstos, also contributed to improvements in both our interpretations and writing. Special thanks go to Thea Moskat and Mary-Ellen Perry for their unfailing attention to the details of producing and editing this report.

CHAPTER I

INTRODUCTION

The RDU Program

The R&D Utilization (RDU) program was designed by NIE as an "action/research" program, aimed primarily at improving local school practices. Improved practice was supposed to result from a number of initiatives, including:

- the application of R&D products or ideas to school problems;
- the development of a problem-solving process, whereby schools would systematically identify such problems and select and implement new ideas; and
- the organization of a linkage system, whereby national, state, and other external resources would be made available to school personnel.

This multifaceted approach was an "action" program in that actual changes were attempted in a variety of schools; in the end, over 300 schools or school districts participated in the program, organized according to seven project awards: four were made to state departments of education (Florida, Pennsylvania, Michigan, and Georgia), two were made to organizations representing agencies across the country (the National Education Association, and a non-profit educational organization, The NETWORK), and one was made to a regional consortium administered by the state of Washington (Northwest Reading Consortium--NRC). The approach was a "research" program in that the ensuing activities were exceptionally well-documented by the projects themselves and have been the subject of subsequent study by an independent contractor, Abt Associates Inc. (see Chabotar and Kell, 1978; and Louis et al., 1979).

The three initiatives mentioned above were maintained in the organization of each of the seven projects. The present report focuses on only the first of these three initiatives to determine how different types of educational products or ideas were selected and adopted by schools. The other two initiatives, involving the problem-solving process and linkage systems, will be treated in separate reports, and the final report will integrate the findings from all three initiatives.*

* These reports will be completed during 1980 and 1981.

The Role of the RDU Program within the Broader NIE Mandate

The use of new ideas to address local school problems was a part of the RDU program that was well-suited to NIE's broader mission (Raizen, 1979):

> The Institute...will have principal responsibility for dissemination of the results of research...[T]he Institute should also seek to stimulate the demand of state and local agencies for educational improvement and to strengthen their capacity for implementing tested innovations. (House Report 92-554, 1971)

Thus, in designing the RDU program, one of NIE's aims was to show that existing products and ideas in education could, in fact, be useful to schools.

The design of the RDU program underwent many modifications and much review before it was finally described in a Request for Proposals (RFP) (see Corwin, forthcoming, 1980). The RFP was issued in 1976, and it requested interested parties to propose action projects, each of which would enlist a large number of local schools to test the existing products or ideas in actual practice. Although there was not necessarily clear consensus among NIE staff regarding the detailed priorities for the RDU program (see Corwin, forthcoming, 1980), the RFP did nevertheless represent the official solicitation to which bidders responded. Thus, it is important to note how the RFP defined the use to be made of educational products or ideas. First, the major stated purpose was to support projects that would:

> ...help to meet [the NIE requirement of helping to solve educational problems in schools] by providing services to schools to implement and use existing research and development outcomes. [Emphasis added.] (NIE, 1975:1)

Similarly, the solicitation gave four criteria for assessing the long-term effects of the RDU program, and all were related to the use of educational products, or "outcomes."* Acceptable effects were defined as:

- an increase in knowledge (by educational personnel) of the "nature and utility of R&D outcomes";
- an increase in the "number of formal assessments of the potential of specific R&D outcomes for local use";
- an increase in "instances where R&D outcomes or appropriate adaptations are implemented successfully"; or
- a reduction of "local problems as a result of the successful implementation of R&D outcomes or appropriate adaptations to meet local needs." (NIE, 1975:1)

---

* The terms "products," "idea," and "outcome" are used synonymously in this report.

The Use of Educational Products in the RDU Program

As originally planned, this report was intended to examine the degree to which schools adopted and implemented existing educational products as a result of their involvement in the RDU program. However, as we began to examine the question of adoptions, it became clear that this simple statement of the issue to be examined ignored enormous efforts made to define what was an eligible product, both by the seven projects and at the school level. Thus, this report will not examine the implementation process, nor will it discuss the outcomes of product implementation by schools. These issues will be discussed in our final report. Preliminary results are also presented in Louis (1980).

The RFP provided only limited guidance for determining a product's eligibility. An existing R&D product was assumed by the original RFP to include "curricula, products, skills, programs, instruments, teaching and management methods and techniques, and the like" (NIE, 1975:2). At first glance, such products appear not to be especially different from those emanating from what Lindblom and Cohen (1979) call "ordinary" knowledge. However, the RFP went further. It stipulated that acceptable products had to satisfy two criteria: evidence of effectiveness and evidence of transportability from one site to another (NIE, 1975:12). The RFP, however, did not provide any guidance concerning the ways in which a project could test for these criteria. The projects could, for instance, assume such evidence existed if a product came from an acceptable source (e.g., the NIE catalog of products, 1975); or the projects could develop their own review or validation procedure. Whatever method was used, the lack of specificity led to variations in project procedures that will be addressed in Chapter II.

Thus, throughout the early portions of the RDU program, a great deal of attention was given to the development of a knowledge base that contained acceptable products* and the process by which each school ultimately selected a product for adoption. A knowledge base, which refers to a specific collection of educational products, was developed for each of the seven RDU projects to serve the needs of the schools or school districts within the project. By design, the seven knowledge bases covered different curriculum

* What constituted an acceptable product changed somewhat during the life of the RDU program. This is discussed in greater detail on page 22.

topics, reflecting the priorities of each project. Thus, basic skills (reading and math) were the dominant topics covered by the knowledge bases in Florida, NRC, Pennsylvania, and The NETWORK. The Georgia knowledge base covered these topics but also included career education and district-level planning; the Michigan project focused mainly on career education; and the NEA project focused mainly on inservice training (which in turn covered a large variety of specific curriculum topics).

Because the RFP required that knowledge-base products be validated, a major issue for each of the projects had to do with a product's acceptability by evaluative standards and the desire to have schools adopt only products that had been previously validated through empirical testing. Thus, the original intent was to assure some quality control over the new ideas that would be implemented within any given school. Our analysis, however, suggests that many schools were eventually presented with numerous nonvalidated products for adoption, including the following examples:

- Two projects (Georgia and Michigan) provided assistance on a curriculum topic--career education--in which the bulk of the existing products had not been validated. As a result, only 20 percent of one project's products (Michigan) were were believed to have been validated. Similarly, one of the most popular products in Georgia ("It Works"), which helped a school to develop a management system for career education was not a validated product.
- One of these projects (Georgia) also provided assistance on a district management topic--planning--in which most of the available products were also nonvalidated.
- In two other projects (Florida and NRC), individual schools were reported to have adopted products that had not been validated.
- In another project (NEA), the major topic of assistance--inservice training--covered so many curriculum areas that little attention could be given to whether the identified products had previously been validated. Based on later analysis by the project's staff, many had not been.
- In only two projects (Pennsylvania and The NETWORK) did it appear that schools had adopted validated products alone.

In summary, the knowledge and products being offered to schools had not necessarily passed through an empirically validated screening process. The products might, however, have served other school needs, including genuine improvements in school practice.* The point of this report is to show that, regardless of these effects, much effort was expended on the problem of "what to adopt," and yet a mixed pattern of adoptions occurred. In the remainder of this report, which is based on data collected through field interviews in the fall of 1978 and spring of 1979, as well as on the analysis of project documents, we analyze how the projects and schools dealt with the adoption problem. The following chapters focus on two major activities that affected eventual adoption patterns: the development of the knowledge base (Chapter II), and the matching of available products to an individual school's needs (Chapter III). These chapters attempt to indicate the difficulties encountered in identifying and screening acceptable products. The final chapter (IV) discusses the research and policy implications of these findings.

* The actual implementation effects will be reported in the final report, which integrates all the different aspects of the RDU program.

CHAPTER II

OPERATING THE KNOWLEDGE BASE

The first critical activity conducted by each of the seven RDU projects was the organization of the knowledge base. This chapter of the report describes: 1) the organizational structure of the seven knowledge bases; 2) the procedures whereby existing educational products were acquired for the knowledge base, both initially and on a continuing basis; and 3) the results of these procedures in terms of different types of products.

Organizational Structure of the Knowledge Base

Each of the seven projects that was awarded a contract had a distinct structure, although each project basically followed the same product, process, and linkage system blueprint. (See Louis, et al., forthcoming.) Because of the structural variations, however, similar project functions were not performed by the same type of agency nor were the functions performed in exactly the same way, a diversity that was desired in the original RFP (NIE, 1975:6).

Staffing Patterns and Level of Effort. The knowledge bases of the seven projects were located in different types of agencies, were staffed by different types of individuals, and operated under different levels of effort. Three of the projects (The NETWORK, Georgia, and the NEA) operated their knowledge bases with their own staffs, within the project's host organization. The other four had contracts with an independent lab or organization, or with an intermediate service agency, for the operation of their knowledge base, but one of these (Michigan) also conducted significant in-house functions.*

The staffing and level of effort varied among the knowledge bases (see Table 1). Staffing ranged from 1.5 full-time equivalents (FY 1978) at The NETWORK to three full-time equivalents in Pennsylvania, and total expenditures for operating the knowledge base (through FY 1979) varied from about $40,000 in Michigan to $230,000 in the NRC. This variation may be explained by two factors. First, the knowledge base staffs were formed at different

* Staff in the Michigan RDU project office searched for, acquired, and did a preliminary review of products. These tentatively acceptable products were then sent to a subcontractor--The Kalamazoo Valley Intermediate Service District--where they were abstracted, evaluated, and reviewed for bias.

Table 1

Staffing and Level of Effort for Each Project's Knowledge Base

Project (Location)	Developer of Knowledge Base (Location)	Date Knowledge Base Staff Began	Size of Knowledge Base Staff, FY 1978 (# of FTEs)	Total Knowledge Base Expenditures Through FY 1979 ($000)
Florida (Tallahasee)	Options for R&D (Tallahassee)	9/76	2.5	112.2
Pennsylvania (Harrisburg)	Research & Information Services for Education (RISE) (Philadelphia)	76	3	125.3
NRC (Seattle)	Northwest Regional Educational Lab (Portland, OR)	6/76	1	231.8
Michigan (East Lansing)	Kalamazoo Valley Intermediate School District, and in-house	11/77	2	37.5
Georgia (Atlanta)	in-house	1/77	2	NA
The NETWORK (Andover, MA)	in-house	6/76	1.5	NA
NEA (Washington, DC)	in-house	11/76	2	NA

NA - not available (knowledge base expenditures cannot be distinguished from other project expenditures)

times; all were not assembled at the same time that the RDU projects were established. Michigan, for example, awarded a contract to the Kalamazoo Valley ISD to assist in the development of the knowledge base in September 1977, 15 months after the Michigan project was funded (June 1976). The Georgia knowledge base also recruited its first staff member late, in January 1977. The expenditures for these knowledge bases from their start through fiscal year 1979, therefore, were less than those for the projects that had begun earlier.

Second, some knowledge-base staffs performed more functions than others. The knowledge-base staffs for the Michigan, NETWORK, and NEA projects, for example, spent all their effort on the search for, review of, and acquisition of R&D products. The others (Florida, Georgia, Pennsylvania, and the NRC), however, divided their time among several functions--administration, training, technical assistance, research and evaluation--as well as on building the knowledge base. The knowledge-base staffs that performed these additional functions--functions that were performed by staff of other project components in the other three projects--generally were larger and had more funds.

Individuals with varying skills and backgrounds made up the knowledge-base staffs. All had at least one person with specific prior experience in developing educational curricula. This person usually assumed the major responsibility for:

- gathering products relevant to sites' needs;
- assisting sites in the selection of a product; and
- assuring the fidelity of the knowledge-base operations to overall program objectives.

Other persons on the knowledge-base staffs included teacher assistants and describers in the NEA, both of whom were responsible for writing brief descriptions of the products in the knowledge base,* and a consultant/evaluator in Michigan, who had the responsibility for evaluating the usefulness and assessing the validity of each product that was considered for inclusion in the knowledge base.

* The product descriptions in most projects were no longer than one page. In the case of the NEA, however, the descriptions were eight pages long.

Three types of documents were produced by the knowledge base staffs, either for use by the staff and the linking agents* or for distribution to the sites (Table 2). All projects had a complete list of the products in the knowledge base. Florida, NRC, Georgia, and the NEA developed written syntheses of the products by content area or by the instructional strategy used, and all projects wrote brief individual descriptions of each product in the knowledge base. These documents were intended to assist the knowledge-base staff, the linking agents, and the sites in selecting a product appropriate to sites' needs. (An example of a product description is shown in Figure 1.)

Contents of the Knowledge Base. Each RDU project emphasized specific problem areas and acquired R&D products relevant to sites' needs in those areas. In its solicitation, NIE said it wanted to give special attention to two areas, basic skills and career education. However, these suggestions were not intended to restrict offerors. As long as an area could be shown to be of high priority to local and state officials, and as long as a "useful range of R&D resources [was] available in that problem area," (NIE, 1975:8) projects were permitted to address any substantive area they chose.

With the exception of the NEA project, all projects chose one or both of the problem areas proposed by NIE. Five projects chose to focus on problems in basic skills. Of these five, the NRC and The NETWORK limited themselves to reading; Pennsylvania and Florida chose to emphasize reading and mathematics; and Georgia chose to focus on problems in reading, mathematics, and career education. The Michigan project decided to emphasize only products in career education, and the NEA project proposed inservice education as its problem area.

As the knowledge-base staff began to communicate with the sites about their specific problems and needs, the content area of some of the knowledge bases broadened. The Georgia project, for example, expanded its knowledge base to include products on district-level planning. The NEA also expanded its knowledge base. Inservice products in special education, early child-

* The RDU program had various personnel, called linking agents, whose explicit tasks were to coordinate the services provided to local sites, guide local school personnel through the school improvement process, and faciliate communications between local staff and the projects.

Table 2

Documents Produced by the Knowledge Bases, by Project

Project	DOCUMENT			Maintains Copy of Actual Product
	Complete List of Products in Knowledge Base	Product Descriptions	Syntheses of Product Topics	
Florida	x	x	x	x
Pennsylvania	x	x		x
NRC	x	x	x	x
Michigan	x	x		x
Georgia	x	x	x	x
The NETWORK	x	x		x
NEA	x	x	x	x

Figure 1

An Example of a Product Description

READING

PRODUCT

Exemplary Center for Reading Instruction (ECRI)

DEVELOPER

Exemplary Center for Reading Instruction
Salt Lake City, Utah

Descriptors

Reading Programs
Elementary Secondary Education
Multimedia Instruction
Management System
Inservice Teacher Education
Behavior Change
Reading Centers

Overview

Working to improve reading instruction throughout the nation, the staff of this center operates a reading clinic for children, trains adults, conducts research and spreads information. The teaching techniques used in this program are adaptable to a variety of language arts materials and organizational patterns. Teachers can learn to employ the teaching techniques and still use existing reading and language arts materials.

Target Audience

Teachers of elementary and secondary students.

Rationale & General Objectives

ECRI is based on the idea that a larger number of students can be reached by training teachers in reading theory and new techniques of instruction. The center found that "teacher behavior is of greater significance than material in affecting gains in reading achievement." Hence, the ultimate goal is to teach teachers so that they might prevent reading failure.

Implementation Requirements

Inservice education programs for teachers operate out of this center. Training is critical in building staff confidence in utilizing the method. Two training sessions of approximately 24 hours are necessary for teachers to complete a multimedia instructional package exported by the center.

Services Available

Monitoring services are available from ECRI.

Approval

USOE Dissemination Review Panel (1974)
Northwest Reading Consortium (1976)

Materials/Costs

Workbooks on different topical areas--approximately $8/workbook (Example: Eliciting Responses from Students)

Teacher Inservice and Consultant--$175 per day plus expenses

Evaluation (Evidence of Effectiveness)

During an 8-month period, ECRI project students had 1.8 years gain in vocabulary and 2.5 years gain in comprehension compared to .9 and .6 year gains respectively for control students, as measured by the Gates-MacGinitie Reading Tests.

Assurances & Claims

The Exemplary Center for Reading Instruction has conducted numerous research studies in the area of reading. Data are available upon request.

Contact

Ethna Reid, Director
ECRI
2888 S. Highland Drive
Salt Lake City, Utah 84106
(801)486-5083

INSTRUCTIONAL PROBLEM AREAS

- Comprehension
- Decoding
- Language Usage
- Listening
- Phonics
- Speaking
- Speed
- Spelling
- Structural Analysis
- Word Recognition
- Writing

CONTENT AREAS

- Business
- Fine Arts
- Foreign Languages
- Language Arts •
- Mathematics
- Science
- Social Studies
- Physical Education
- Vocational-Technical

INSTRUCTIONAL STRATEGIES

- Behavior Change •
- Centers •
- Continuous Progress
- Corrective Reading
- Cross-Age Teaching
- Diagnostic-Prescriptive
- Directed Teaching
- Exploratory Reading
- Gaming-Simulation
- Group Instruction
- Individualized
- Laboratories
- Parent Participation •
- Student Motivation
- Team Teaching
- Tutors

SPECIALIZED PROGRAMS

- Staff Development •
- Management System •
- Tests and Assessment •

Northwest Regional Educational Laboratory
300 S.W. Sixth Avenue
Portland, Oregon 97204

hood education, and multi-cultural education were added to those inservice products on topics that had initially been deemed relevant to the sites' needs.*

The number of products in the knowledge base ranged from 42 (The NETWORK) to 615 (NEA). Except for the NEA project, however, no knowledge base contained more than 150 products (see Table 3). The products in the knowledge bases were directed to administrators and teachers in elementary and secondary schools, and to linking agents.** More products were available for elementary teachers and students, however, than were available for those in secondary schools; similarly, more products were directed to teachers than to administrators. In subsequent interviews, the project personnel indicated that the paucity of secondary school products was a major shortcoming among the available R&D products.

Acquisition of Products for the Knowledge Base

The preceding section described the general organization, curriculum content, and size of the seven knowledge bases. The point of the discussion has been to suggest the extensive efforts made by the seven projects to develop an appropriate knowledge base. The key step that determined the contents of the knowledge base, however, had to do with the procedures for acquiring specific educational products that were to be part of it. Each project developed different procedures, and these are of critical importance in understanding the ultimate degree to which each knowledge base actually contained acceptable products.

Search Procedure. In looking for products for the knowledge base, each project initially examined a variety of sources. These sources included:

* The NEA project benefited from a pilot effort that had been completed before the RDU program began. However, the pilot effort was too narrow, and NEA's knowledge base eventually included inservice products on 14 topics. These included: assessing student growth, career education, classroom management, early childhood education, English language arts, individualized instruction, mathematics, motivation, multicultural education, reading, science, social studies, special education, and teaching strategies.

**The NEA project was the major exception. Because the NEA is a professional organization whose membership consists primarily of teachers, the products in the NEA's knowledge base were limited to teachers.

Table 3

Number of Knowledge Base Products in Various Curriculum Areas, by Project, Spring 1979

Knowledge Base	CURRICULUM AREA						Total Products in Knowledge Base
	Basic Skills		Career Education	Inservice Education	District-Level Planning	Other	
	Reading	Math					
Florida	68	21	-	-	-	3	92
Pennsylvania	94	18	-	4	-	7	123
NRC	59	-	-	-	-	-	59
Michigan	-	-	150	-	-	-	150
Georgia	49	25	22	-	8	11	115
The NETWORK	42	-	-	-	-	-	42
NEA	-	-	-	615*	-	-	615

* The 615 inservice products included 30 on assessing student growth, 15 on career education, 40 on classroom management, 20 on early childhood education, 30 on English language arts, 65 on individualized instruction, 55 on mathematics, 70 on motivation, 25 on multi-cultural education, 60 on reading, 20 on science, 45 on social studies, 40 on special education, and 100 on teaching strategies.

- existing catalogs of R&D products, published by the National Diffusion Network (NDN), NIE itself, and commercial publishers;
- existing R&D products that were already part of some state or local information center;
- other published sources, such as ERIC;
- recommendations from NIE labs and centers; and
- word-of-mouth recommendations by state and local personnel, often as a result of communications with sites in other regions of the country.

The projects varied in the extensiveness of their searches, which depended upon the curriculum topics to be covered. If a project focused on a topic such as career education or inservice training, where R&D information was less easily available, the knowledge-base staff had to conduct a wide search for the needed products. Moreover, such products did not necessarily exist in large numbers, because little R&D work may have been done on the topic in the first place. Building a knowledge base, in these cases, became a challenging task.

The projects also varied in the extensiveness of the search procedure over time. One project (The NETWORK) assembled its entire knowledge base as part of its original proposal--i.e., before the initiation of the project--and the composition of the knowledge base was modified only once after that. Other projects (Georgia and Michigan) required long start-up periods and were only completing their knowledge bases by the third year of the project. Still other projects assembled an initial array of products, and then added to this array over time as new products were recommended or encountered (Pennsylvania). Often, these recommendations came from the sites, which, as a result of their problem-solving activities (see Chapter IV of this report), had identified some product that was not part of the original knowledge base.

Validation Procedure. Given the array of sources searched, each project was expected to screen candidates for the knowledge base on the basis of three criteria. First, the product had to fall within a relevant curriculum topic. Second, the product had to be in usable condition--i.e., the materials had to be complete, adequate instructions had to exist, and both had to be available for purchase (potentially by several sites) from some source. Third, and most important to this paper, the products had to

represent products that had previously been validated for their effectiveness and transportability through empirical testing. The first two criteria were handled with little difficulty by each project. The last criterion, however, posed many difficulties and deserves further discussion.

According to the RFP, the validation criterion could be met by the fact that a product came from some acceptable source. An acceptable source, as suggested in the RFP, could be an R&D lab or center, or an existing catalog. The catalog of NIE-funded products is prominently mentioned in the RFP. Other relevant catalogs were the catalog of NDN products or some substitute proposed by the project. In each case, it was presumed that appearance in one of these catalogs meant that a product had already passed through some validation procedure. This is true of the NDN catalog, for instance, where products can only be listed if they have been approved, on the basis of empirical evidence, by a USOE-NIE Joint Dissemination Review Panel. The panel, consisting of representatives from USOE and NIE, judges products using three conditions:

- The evidence of a product's effectiveness must be valid and reliable;
- The effect must be of sufficient magnitude to have educational importance; and
- The intervention and its effect must be reproducible at other sites (USOE and NIE, 1977).

Evidence of these three conditions is judged by six criteria. First, a positive change must have occurred. Second, the effect (or the change) must be consistent enough and have been observed often enough that it is statistically significant. Third, the effect must be educationally significant. Fourth, the intervention must be transportable. Fifth, the effects must be a result of the intervention. And sixth, the evidence of the product's effectiveness must be reliable. In contrast to the NDN procedure, however, the products listed in the NIE catalog, by NIE's own admission, had not all passed through a similar validation procedure.* Thus, it is likely that RDU

* Of the 660 products described in the NIE catalog, approximately half "have undergone small-scale controlled tests for effectiveness." An additional one-third have been replicated in a number of sites "to confirm that the products are effective, can be used with little difficulty, and work in a variety of settings," leaving approximately 110 products in the NIE catalog that may not have been validated in any way (Catalog, 1975). In addition, an informal NIE review of the quality of product evaluations suggested that many products classified as validated would not be able to pass a Joint Dissemination Review Panel review (personal communication from M. Millsap).

projects were already using nonvalidated products by using products from these presumably acceptable sources.

As suggested in the RFP,, some projects established their own review or validation procedure (NRC) or used procedures that already existed in their states (Pennsylvania, The NETWORK, and Michigan). These procedures varied, however, in their degree of adequacy as validating procedures. If the validating panel, for instance, had access to empirical evidence concerning the effectiveness and transportability of a product, the review of such evidence constituted an acceptable procedure. In contrast, if the procedure only involved the gathering of an expert panel--which examined a product for its "surface validity" but had no access to actual empirical information--the procedure was not considered satisfactory. Based on our interviews, the adequacy of the validation procedures that were used by these four RDU projects cannot be judged precisely; all four probably had to contend with differing amounts of empirical evidence, depending upon the product under review, and we do not know the frequency with which only "surface validity" judgments were made. However, a few nonvalidated products probably entered the knowledge bases because of the unevenness of the validation procedures.

Products could also enter the knowledge base through other channels, as happened in several of the projects (Florida, Michigan, Georgia, and NEA). Thus, a product could emanate from some non-acceptable source--i.e., not a lab or center and not one of the previously mentioned catalogs--and also not be subjected to a state or local validation procedure. RDU projects were often forced to use this third procedure when an adequate array of validated products could not be assembled, and when a site would suggest some product it wanted to adopt.

For most of the RDU projects, the knowledge base was assembled by using all three procedures, to varying degrees.* The following paragraphs describe the general procedures developed by each project:

---

* The RFP also mentions the possibility that validation procedures can be applied after a site has adopted a product, and that this would constitute an acceptable certification procedure. One project (NEA) was still trying to ascertain the status of its entire knowledge base, however, into the third year of the project.

Florida. The Florida project did not have its own validation procedure, but selected products for its knowledge base from the NIE catalog, the NDN catalog, and publishers' listings of validated products. When no validated product matched a site's needs, the knowledge base staff accepted a nonvalidated product into the knowledge base*. These products, although they may have had a surface validity, had not been systematically evaluated for their effectiveness and transportability.

Pennsylvania. The Pennsylvania knowledge base acquired products from three sources--the NIE catalog, the NDN catalog, and the listing of products in the Pennsylvania Diffusion Program (PDP). The knowledge base did not have its own validation procedure, but relied on the validation procedures of the sources from which its products were drawn. The PDP validation procedure was less rigid in evaluating a product's effectiveness than the procedure used by the JDRP. The PDP panel, composed of 27 people from local school districts, state education departments, and institutions of higher education, accepted a product as valid if indirect evidence of the product's effect was shown.

NRC. The NRC's knowledge base consisted of products from the NIE catalog, the NDN catalog, the Right-to-Read catalog, and ERIC, and products that were acquired through informal sources. Although many of these products were validated by a state or national review panel, the knowledge base staff also reviewed all candidate products, using a consistent set of criteria. Each product underwent two levels of review. The knowledge-base staff first checked to make sure that all the necessary product information was available. If it was, a six-member panel, comprised of the NRC project director, the knowledge-base manager, the Right-to-Read director for the state in which the panel convened, a teacher, a representative from higher education, and the linker from the host state, then rated the product on its proven effectiveness. Those products receiving a minimum score or better were accepted into the knowledge base. The NRC project adhered to this procedure throughout the project and appears to have had only validated products in its knowledge base.

Michigan. The Michigan project acquired its products from the NIE catalog, the NDN catalog, commercial publishers, and through word-of-mouth communications. Originally, the products that were accepted into the knowledge base had to satisfy three criteria. First, each product had to be reviewed by the JDRP. Second, the product's effectiveness had to have been tested at an appropriate site. Third, the product had to have been approved by the State Classification Committee. These criteria were relaxed, however, when few validated products in career education were found. According to one interviewee, only 20 percent of Michigan's knowledge base products ultimately satisfied the project's original validation criteria.

* The Florida knowledge base acquired the SRA kits--Mathematics Involvement, Mastery Test, and Schoolhouse Comprehension--under these conditions. As of the spring of 1979, three sites in Florida had adopted these products.

Georgia. The Georgia project did not have a validation procedure. Although the knowledge base staff reviewed the candidate products for surface validity, making sure that the products' materials existed, that the products were easy to use, and that they came with staff development assistance, proven success and transportability of the products were not assessed. Some of the products were selected from the NIE catalog and the NDN catalog and, thus, may have been shown effective by other review panels. Yet the Georgia project itself had no systematic procedure for judging the product's validity, and many products were acquired through sources other than these catalogs, such as listings of Title IV-C adoptions in the state.

The NETWORK. The Network selected its products from the NIE catalog, the NDN catalog, and ERIC. A few products were received through educational labs or centers. All products were validated. Those products from the NDN catalog were accepted as validated. All others had been reviewed by state level panels, where statistical evidence that a product had a positive effect on students, teachers, or administrators had been presented.

NEA. The NEA project did not have a procedure for assuring that only validated products were admitted to the knowledge base. Although some products had been field tested as part of their development, most of the 615 products in the knowledge base had not been validated. As with the Michigan project, many of the products were acquired through commercial publishers and through recommendations of personnel in education associations, and were not systematically checked for their validity.*

Results of Knowledge Base Acquisition

The results of these acquisition procedures are reflected by the proportion of validated products in the seven knowledge bases. To the extent that the NIE or NDN catalogs were the source of the products, the proportion of nonvalidated products could be checked (about 100 of the NIE catalog's products had no validation data--see footnote p. 15), and these NIE-NDN results are shown in Table 4. However, although product lists were created by all projects, we have been unable to make a definitive analysis of the remainder of the products for two reasons. First, the projects themselves did not sufficiently document their own validation procedures for each product. For any given product that had passed through the local validation procedure, for instance, we do not know the full nature of the evidence that was reviewed. Second, the knowledge bases in the aggregate had too many different products, so that any retrospective attempt to call developers at this time would be impractical.

* In the spring of 1979, NEA's knowledge-base staff was calling developers to check on products' validity, even though most sites had already selected and adopted a product. The results of the phone calls showed that many products had not been empirically tested. In some cases the developer had moved from the institution where the product had been developed, and the developer's new address was unknown. In addition, several of the publishers were no longer in business.

Table 4

Number of Products From Either NDN or NIE Catalogs, by Knowledge Base*

Knowledge Base	Total No. of Products	Source of Products						No. of non-validated NIE products
		Non-NIE or NDN Source		NIE Catalog		NDN Catalog		
		No.	%	No.	%	No.	%	
Florida	92	50	54.3	27	29.3	15	16.3	(5)
Pennsylvania	123	17	13.8	38	30.1	68	55.3	(7)
NRC	59	20	33.9	6	10.2	33	55.9	(0)
Michigan	150	120	80.0	24	16.0	6	4.0	(24)
Georgia	115	46	40.0	21	18.3	48	41.7	(2)
The NETWORK	41	17	41.5	6	14.6	18	43.9	(0)
NEA	615	?	?	?	?	?	?	(?)

The figures in this table were compiled by determining whether the products in each project's knowledge base, as of spring 1979, were listed in either the NDN or NIE catalogs.

Nevertheless, we can make rough estimates of the degree to which the knowledge bases contained nonvalidated products. This can be done by summarizing the acquisition procedures, as shown in Figure 2. Each chart depicts the procedures followed by each project, dividing the procedures into three categories: products entering as a result of an acceptable catalog (column 1); products passing through a state or project validation procedure (column 2); and products coming from outside sources (column 3). A vertical arrow is shown where products entered the knowledge base through one of these three procedures. The products from outside sources should preferably have passed through the state or project validation procedure, and where this occurred (NRC, Pennsylvania, The NETWORK, and Michigan), a horizontal arrow is shown.*

The charts show that in three projects (NRC, Pennsylvania, and The NETWORK) the acquisition procedures were sufficient to assure adequate screening, given two assumptions: 1) that the NIE products had been among those validated by NIE, and 2) that the local validation procedures were properly followed for every product. (In Pennsylvania, however, 7 of the 38 NIE products were those that were nonvalidated.) Two projects (Florida and Georgia) had no validation procedure of their own, yet products from outside sources were known to have been used.** This seems to have occurred to a much greater extent in Georgia than in Florida, because Georgia had to cover topics, such as career education and district-level planning, in which few R&D products were known to have existed. Finally, two projects (Michigan and NEA) are known to have acquired many products that neither came from an acceptable source (column 1) nor passed through a validation procedure (column 2), even though Michigan did have such a procedure. This is reflected by the double arrows in column 3.

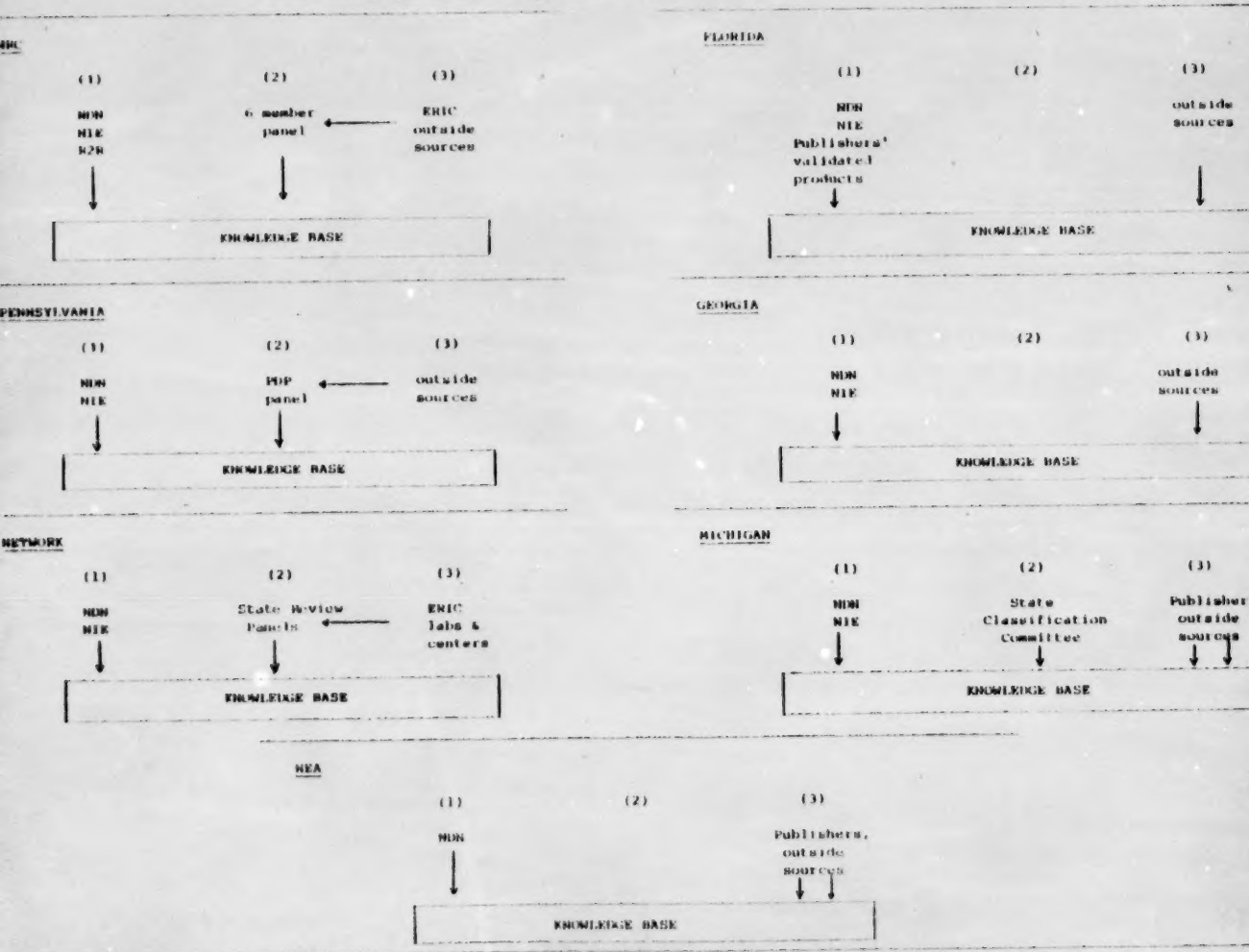
---

* It may be that products from outside sources have nevertheless passed through some other validation procedure. Although the extent to which this occurred is not known, we do not believe it occurred with significant frequency to alter our overall conclusions.

**Florida, although it had no formal validation procedure, did screen products in a more informal sense. For example, products that were authored by experts or conformed to current theory were admitted to the knowledge base.

Figure 2

Knowledge Base Acquisition Procedures, by Project



These charts suggest that the seven knowledge bases had the proportions of nonvalidated products shown in Table 5. Based on these figures, the RDU program as a whole appears to have allowed the use of many such products. In fact, the definitions of what constituted an "acceptable" product shifted over the course of the project as the seven projects and the NIE program manager confronted some of the difficulties and perceived the real constraints involved in developing a comprehensive array of products to serve school needs. At the inception of the program, the emphasis had been placed upon R&D products, or upon new curriculum or other innovations that were part of a deliberate applied research, development, packaging, and dissemination process. In the RFP, as we have noted, the definition was shifted somewhat to include products that were empirically validated, whether they were based upon research knowledge or not. Finally, during the course of the project, the NIE program officer and the seven project directors came to a decision that the development of less rigorous screening procedures would be acceptable (although if the project concurrently instituted procedures to empirically evaluate the effects of the innovation the less rigorous would not be preferred). This decision was reached after much debate among the project directors, and specifically after the Florida project asked whether it should meet client demands for diagnostic-prescriptive innovations in reading despite the questionable quality of these products using "validation" standards (letter from R. Gagne to T. Israel, October 11, 1977). This decision was not, however, made until after the project had been in operation for nearly a year and a half, and after much effort had been expended on an attempt to meet more rigorous standards of quality control.

Before drawing any final conclusions about quality control, we must examine the projects' procedures for matching site needs with available products. One possibility, for instance, is that the sites ended up adopting only the validated products in the knowledge bases, thereby compensating for the knowledge base slippage. However, this turns out not to have been the case.

Table 5

Proportion of Nonvalidated Products in Seven Knowledge Bases

Nonvalidated Products in Knowledge Base	Project
None	NRC, The NETWORK
Some	Florida, Pennsylvania
Many	Georgia
A majority of all products in the knowledge base	Michigan, NEA

CHAPTER III

MATCHING SITE NEEDS WITH AVAILABLE PRODUCTS

The use of products in the RDU program depended on two major steps. The first, described in the previous chapter, was the development of a knowledge base. The second, described here, was the provision of assistance to school sites--to guide these sites in matching needs to specific products and then to assist in adoption (and later implementation). Much of this assistance was initiated while the RDU projects were still developing their knowledge bases, so that these two major steps often occurred simultaneously.

The work with the sites was a complex process that could involve several activities, such as:

- identifying candidate sites to participate in the RDU project (in some cases, sites were named in the original proposal);
- establishing ad hoc teams or committees at the site level and, where relevant, providing sites with funds to conduct the RDU activities (funds were used to purchase released time for teachers or to purchase the products themselves);
- recruiting and training individuals to serve as linking agents, usually located in some intermediary organization, to assist sites in selecting and implementing products from the knowledge base;
- requiring the sites to follow a problem-solving process, which included the examination of needs before considering alternative courses of action; and
- assisting sites in making the final selection of a specific product to be used.

Because of the complexity and importance of each of these activities, separate reports will be written about several of them as part of the overall Abt Associates research effort. Moreover, the success of the RDU program cannot be judged on the basis of any of these activities alone, as the design of the RDU program had multiple objectives (see Corwin, forthcoming 1980). The main purpose of the following discussion is to continue our tracking of the selection and use of educational products, with the primary focus on the last activity listed above.

The selection process involved several steps, culminating with a specific adoption; these steps as well as the adoption outcomes are described in the following subsections.* Our attention will again be on the degree to which nonvalidated products were ultimately adopted, and thus the extent to which the adoption patterns did not conform to the original intentions expressed in the RFP. The steps in the selection process included: 1) the initial presentation of candidate products for adoption; 2) the screening of these candidate products by the sites; and 3) the final adoption.

Initial Presentation of Candidate Products for Adoption

Assuming that a site had completed some type of needs assessment, it was then ready to consider various products that could be adopted. The original RFP, however, provided no guidance for how the matching process--in which site needs were to be related to available products--was to take place. Moreover, this matching process was a potentially difficult one, if the needs of a site could not be matched by any available product. Most of the projects ultimately developed a general procedure whereby lists of potentially relevant products from the knowledge base were made available to the site teams for their consideration. However, there were significant variations among the projects in following this procedure.

Modes of Communication. In most cases (Florida, Georgia, Michigan, and NEA), the site teams were encouraged to make direct contact with knowledge-base staff,** indicating the topic or topics of interest that resulted from their needs assessments. The knowledge-base staff then identified an appropriate array of potentially relevant products and sent brief descriptions of these products to the sites. In the NEA project, this was done when a site would make a telephone call to the knowledge-base staff and descriptions of all the products in the relevant categories, based on a prior classification scheme, were then sent to the site.

* Modifications could also occur after adoption, but these implementation activities are beyond the scope of the current report.

**In Michigan, sites contacted the knowledge-base staff in the state department of education.

In other cases, and during the initial phases of most projects, the procedure was more interactive and involved face-to-face communications, with the site staff visiting the knowledge-base staff or vice versa. In Georgia, some initial orientation to the whole product array in the knowledge base was communicated through two "educational exchanges," or conferences at which teachers from many sites were invited to review a wide array of materials. These conferences were uniformly judged to be a highly satisfactory way of orienting site personnel and giving them an idea of the potential products before the needs assessments were completed.

In other cases (The NETWORK, NRC, and Pennsylvania), the site teams did not make direct contact with the knowledge-base staff, but worked instead with the project's linking agents.* In these cases, the linker ascertained the topics of interest from the site, worked with the knowledge base staff to select potential candidates, and then explained the various possibilities to the site personnel. The linking agent thus served as an intermediary in the matching process.

This major variation in communication links did not appear to create any consistent differences in the ultimate product adoption patterns, but deserves further attention because of the different roles implied for the linking agent. In the first mode of communication, where sites dealt directly with the knowledge-base staff, the site personnel were regarded as the primary users of the knowledge base, and knowledge-base documents were oriented toward the terminology and needs of practitioners. The linking agent played only a secondary role in the communications process, generally being informed of the site's interaction with the knowledge base after it had occurred. In at least one project (NEA), linking agents came to play increasingly peripheral functions as a result of this procedure, and on occasion the linking agents were not even informed about the site's communication with the knowledge base. In the second mode of communication, where sites dealt through the linking agents and only indirectly with the knowledge-base staff, the linking agents were regarded as the primary users of the knowledge base. In this situation, knowledge-base documents were oriented

* A "mixed" mode of communications could also occur on occasion (e.g., in a few sites in Georgia and NRC), in which the knowledge base staff and linking agents worked together in dealing with site personnel.

toward the terminology and needs of the linking agents, and thus the linking agents had a strong role in influencing a site's final selection. Overall, the mode of communication reflected the degree of activity on the part of the linking agents; where they were not heavily involved, the knowledge-base staff actually filled the linking function. This was the case for several of the projects.

Size of the Candidate Array. Each project also had to develop its own sense of the appropriate size of the initial candidate array, whether presented directly to the site or through a linking agent. The size, or number of products, had to be large enough so that sites could have some choice in making their final selection, but small enough to be manageable. Projects generally presented about ten products, where available, in this initial array. This problem was further compounded by the nature of the materials used to describe each product. Most sites would have preferred receiving the product itself, but would then have had difficulty in reviewing the materials for such a large array. As a result, all the projects developed their own one- or two-page descriptive summaries of each project, and this was the material that was sent to each site.*

Screening of Candidate Products

Sites' screening of candidate products generally followed two stages. During the first stage, a site, in theory, was to review the candidate products for their potential relevance, and to reduce the initial pool of candidates to a smaller set of two or three final candidates. During the second stage, the site would request more information about these final candidates, and the knowledge-base staff would have to be contacted again for this information. At this point, the knowledge base staff typically loaned the actual product materials to the site, or even suggested direct contact between the site and the original developers of the products (e.g., Pennsylvania). The site teams then reviewed in detail these final candidates and selected one for adoption.

* The issue of the size and nature of materials in the initial array needs to be given greater attention in the future. Pennsylvania, for example, initially presented a large number of candidate products to sites. When sites were finding it difficult to select a product from such a large array, the knowledge base staff significantly reduced the number of candidate products that they presented.

This second stage was conducted most systematically in two of the RDU projects (Georgia and Pennsylvania). Occasionally however, the knowledge-base staff had difficulty keeping track of the product materials that had been loaned out. In the other projects, the second stage was often blurred with the first, so that the process of narrowing down the initial list of candidates occurred in a less distinctive, two-stage manner. For instance, where linking agents were heavily involved in the matching process, the two stages might have been collapsed into a single stage, or several iterations might even have occurred before a final adoption was made.

Whatever the process, the final selection often revealed a host of problems that had to be addressed in a site-by-site manner. First, in some cases the sites may have had a single product in mind all along, possibly preceding the needs assessment activity. This prior preference may have been well-suited to the site's own sense of its needs before entering the RDU program, or it may have reflected a bias that was not justified by the site's actual needs. The extent to which these situations arose can only be documented by further information from the sites.*

Second, in other cases the sites may have identified their own candidate products to augment the candidates selected by the knowledge-base staff. This was especially true in those projects (e.g., Michigan, Georgia, and NEA) where it took two or three years to complete the knowledge base, and where the sites had therefore advanced more quickly than the RDU projects' preparations. In these cases, the sites' candidates were frequently incorporated into the incomplete knowledge base. These cases represented important occasions when nonvalidated products could be incorporated into the system, because the sites did not necessarily present any compelling evidence that their candidates had been validated for prior effectiveness.

Third, the review of candidate products often revealed a mismatch between the categories or terminology used by the knowledge bases to classify their products and the categories or terminology used by the sites. The level of specificity could be different. Thus, sites could decide in their

* At the time of this report, survey data from the sites were not yet available for analyzing this issue.

needs assessments that they had a "motivational" problem among the students, which was not specific enough to identify accurately the potentially relevant products (e.g., Florida); further probes were needed to determine that the specific problem may have been students fighting in the hallways, and on this basis it was easier to determine whether a relevant product was available or not. Conversely, some sites came up with specific needs statements, but then could not easily cope with the generality of the product descriptions (e.g., Pennsylvania). Similarly, some sites made their needs known in terms of curriculum content even though the knowledge-base products were initially classified by teaching processes (e.g., NEA), or vice versa (e.g., Florida).

Fourth, it was entirely possible that none of the candidate products, even with accurate communications, served a site's needs. In theory, the knowledge-base staff was then supposed to conduct a further search, beyond the knowledge base, for a potentially relevant product--a provision that was covered by the original RFP (NIE, 1975:15). However, little attention had been given to the fact that this wider search could take a long time--far exceeding the site's schedule for adopting a specific product--and this broader search would have to be conducted with undue haste, again leading to the possibility of using nonvalidated products. Whatever the outcome, the provision for having a further iteration at this point was judged unrealistic by some projects.

All of these problems should suggest that the screening process was not an orderly or simple one. In fact, we believe that this process bore the brunt of one of the conflicting elements in the basic design of the RDU program.* On the one hand, sites were to use existing R&D products. On the other hand, sites were to undergo a problem-solving process, whereby a needs assessment was the initial step.** Only unabashed optimism would lead to the conclusion that the available validated products were likely to match, with high frequency, the articulated needs of sites. As a partial remedy, the RFP did make one provision for dealing with the potential conflict:

---

* There is evidence from related interviews that some NIE staff members were aware of this potential conflict but could not influence the modification of the design of the RDU program.

**The conflict between these elements may be found in programs other than education (e.g., see Yin, 1978; and Roessner, 1979).

> ...a legitimate project outcome could be the conclusion that in a specific local situation there is no R&D [product] that represents an acceptable solution to the defined problem. Such a conclusion, properly documented, could add to [NIE's] understanding of field requirements for further R&D (NIE, 1975:4-5).

This provision fails, however, to indicate what the site should have done when this situation was encountered. Most, if not all, of the sites were recruited into the RDU program on the basis that some assistance would be provided in dealing with their school problems. An impasse of the sort described in the RFP, while potentially useful to NIE, would not likely have been an acceptable conclusion from the site's point of view. Not surprisingly, the seven RDU projects therefore did everything they could to find some acceptable product for every site, even when the impasse was encountered. At the same time, it is also true that the projects did little to document, on a systematic basis, those situations in which the impasse occurred, and thus there is only sparse information regarding further needs for new types of products. The only information of this sort derives from interviews with project director or knowledge-base staffs, who typically reported the need for more products in secondary education in general, and in non-reading and non-math curriculum topics.

Final Adoption Patterns

As a result of this matching process, the sites finally did adopt some product.* For sites that had adopted a product by the spring of 1979,** the full list of adopted products, by project, is shown in Table 6. The table shows the products by educational area (career education, reading, mathematics, and miscellaneous). Sixty-four products were adopted by only a single site, whereas 36 products were adopted by more than one site; of these multiple adoptions, the most popular products were: Wisconsin Design for Reading (adopted by eleven sites), Career Development Centered Curriculum (seven sites), San Diego R2R (seven sites), Exemplary Center for Reading Instruction--ECRI (six sites), It Works (six sites), AEL Career Decision Making Program (six sites), and Houghton-Mifflin Basal Management System (five sites).

* Some sites dropped out of the program before reaching the adoption stage; others dropped out after adoption, but little documentation exists regarding the reasons for these dropouts. (The Michigan project did collect information on the reasons for sites dropping out, however.) Finally, some sites had not reached the adoption stage by the time this report was drafted.

**Many sites had not reached the adoption step by this time.

Table 6

Product Adoptions for Each RDU Project, by Spring 1979

NAME OF PRODUCT	PROJECT						
	Florida	Penn.	NRC	Mich.	Georgia	NETWORK	NEA
CAREER EDUCATION							
Crisp Co. (Ga.) & Orange Co. (Fla.) Career Education*					1		
Basic Skills Through Practical Arts					1		
Georgia Career Guidance					4		
It Works					6		
Locally Developed Career Education Handbook*					1		
Orange Co. (Fla.) Career Education					1		
Free To Be You and Me				2			
Careers: A Supplemental Reading Program				3			
Innerchange				2			
Project HEAR (1)				1			
Livelihoods				5			
My Bread and Butterflies Career Book				3			

Table 6 (continued)

NAME OF PRODUCT	PROJECT						
	Florida	Penn.	NRC	Mich.	Georgia	NETWORK	NEA
CAREER EDUCATION (continued)							
Career Awareness Exploration Curriculum Kit				3			
Freestyle				1			
Career Development Centered Curriculum (1)				7			
Getting It Together				1			
The Job Ahead				1			
The Magic Circle				2			
Employability Skills				3			
AEL Experience-Based Career Education Program (1)				1			
AEL Career Decisionmaking Program				6			
First Jobs				3			
Health: Decisions for Growth				1			
Career Exploration in the Earth Sciences (2)				1			
Michigan ACT Career Planning Program				1			

Table 6 (continued)

NAME OF PRODUCT	PROJECT						
	Florida	Penn.	NRC	Mich.	Georgia	NETWORK	NEA
CAREER EDUCATION (continued)							
Working With Trees (2)				1			
Introduction to Community Centers				1			
Career Opportunities Boxes				2			
Just Me (2)				1			
Career Development for Children				1			
Exploring Careers				1			
Valuing Approach to Career Education				2			
Goofy Goes to Work				1			
Kangaroo Kit				1			
Career Awareness K-6				1			
Doso Kits (American Guidance Assoc.)*				2			
Me and Others				2			

Table 6 (continued)

NAME OF PRODUCT	PROJECT						
	Florida	Penn.	NRC	Mich.	Georgia	NETWORK	NEA
READING							
Continuous Progress Reading *					1		
English/Reading Rotation Program (1)					1		
Project PAL (1)					1		
Secondary Reading Lab					1		
Individual Language Arts (1)		1					
Manlies Program, NY State Coordinated English-Language Arts *		1					
SMART (1)		2					
Escajeda Plan (thru Precision Teaching and SDR)		2					
Perception Plus (1)		1					
SDR (1)		2					
Basic Spelling	1						
Wisconsin Design for Reading (2)	3		4			4	
Project MARC	2						
Open Court	4						
Exemplary Center for Reading Instruction-- ECRI (1)	1		1			4	

Table 6 (continued)

NAME OF PRODUCT	PROJECT						
	Florida	Penn.	NRC	Mich.	Georgia	NETWORK	NEA
READING (continued)							
Barnell Loft Skills	1						
SRA-Schoolhouse Comprehension	1						
FOCUS--Reading Curriculum* (1)			1				
Laubach Tutoring Program*			1				
Junior Great Books*			1				
Content Reading Inservice Package*			1				
Communication Skills Improvement Center (1)			1				
Intensive Reading Improvement Center (1)			1				
Dallas Basic Skills*			1				
Nampa Communication Skills*			2				
Miscellaneous Products developed by the sites*			8				
San Diego R2R			2			5	
Pegasus-PACE (1)						2	
Classroom Intervention Project (1)						3	

Table 6 (continued)

NAME OF PRODUCT	PROJECT						
	Florida	Penn.	NRC	Mich.	Georgia	NETWORK	NEA
READING (continued)							
Systematic Approach to Reading Improvement--SARI			4				
Houghton-Mifflin Basal Management System*			5				
Spellscript*			2				
Parents Assist Beginning Reading Management System*			2				
SWRL-Ginn Communication Skills Program			1				
Sustained Silent Reading*			1				
Reading Resource Center*			1				
Development of a Language Arts Scope/Sequence*			1				
Engleman-Becker Reading and Morphographic Spelling*			1				
Columbia River Developmental Reading Program			1				
Bay Area Writing Program*			1				
Holt Series and Management System*			1				

Table 6 (continued)

NAME OF PRODUCT	PROJECT						
	Florida	Penn.	NRC	Mich.	Georgia	NETWORK	NEA
READING (continued)							
Hawaii English Program (1)						1	
Individually Programmed Instruction(2)						1	
Project Catch-Up (1)						1	
Accountability in Primary Reading Program						1	
Vocational Reading Power Program (1)						1	
Andover Individualized Reading System						1	
Concepts and Language (2)						1	
Improvement of Basic Reading Skills (1)						1	
1976 Lippincott Reading Text and Management System						1	
MATHEMATICS							
STAMM (1)		1			3		
PRIMES		1					
Keymath	1						
Proficiency Verification Program With Learning Center Resources	1						

Table 6 (concluded)

NAME OF PRODUCT	PROJECT						
	Florida	Penn.	NRC	Mich.	Georgia	NETWORK	NEA
MATHEMATICS (continued)							
Brevard County LAMP	3						
Math Learning Systems	1						
SRA--Mathematics Involvement	1						
SRA--Mastery Test	1						
MISCELLANEOUS							
Evaluation Workshop from the Center for the Study of Evaluation* (2)					1		
SPECS--School Planning, Evaluation, & Communications System* (2)					1		
Wehauken Plan*					1		
Positive Attitude Towards Learning--PATL (1)		2					
Individually Guided Education (2)	1						

KEY

The NEA project did not keep a list of the products that were adopted by the sites.

* Product not in knowledge base

(1) Product listed in the NDN catalog

(2) Product listed in the NIE catalog

With regard to the the use of validated products, it is again impossible to determine the precise proportion of adopted products that were validated. No data were available to determine whether each adopted product had been validated, and the list is too long to be investigated on a post hoc basis. However, some summary inferences may be made by following either of two alternative approaches.

The first approach is based on the proportion of adopted products that fell outside of the knowledge base. In these cases, sites completed their needs assessment and identified some product that was not in the project's original knowledge base. Although some projects tried to resist this type of adoption, either by dropping the site from the project or by disallowing the small amount of funds available for assistance in implementation, 21.1 percent of the adoptions ultimately involved a product that was outside of the knowledge base, while 78.9 percent involved a product that was inside the knowledge base (see Table 7). Moreover, only about half of the adoptions involving products within the project's knowledge base were in projects (NRC, The NETWORK, Pennsylvania, and Florida) whose knowledge bases were judged to have had a low or null proportion of nonvalidated products in the first place (see Table 5 presented earlier). Thus, if one assumes that all of the products from outside the knowledge bases were nonvalidated, this approach suggests that, overall, 50 to 60 percent of all the adoptions may have involved nonvalidated products (21.1 percent plus half of 78.9 percent).

The second approach is based on identifying the adopted products according to their source (NIE catalog, NDN catalog, or neither), and combining these frequencies with two known factors: the number of NIE products that had not been validated,* and whether the project had its own validation procedure. These data are summarized in Table 8, which assumes that products subjected to a local validation procedure may be considered validated (except for Michigan, where it was known that most of the products were not subject to the state classification procedure), and that products falling outside of the knowledge base or not subjected to local validation

* There was some question during the program whether a product was acceptable if it was a research-based product but had not been validated. Following discussions with NIE, some projects did allow this more lenient definition and accepted products from the NIE catalog into the knowledge base on this basis.

Table 7

Product Adoption Patterns,
by Spring 1979 (six RDU projects*)

KNOWLEDGE BASE STATUS	NO. OF ADOPTED PRODUCTS	ADOPTIONS**	
		No.	%
In Knowledge Base	74	153	78.9
Outside of Knowledge Base	26	41	21.1
TOTAL	100	194***	100.0

* The table does not present adoption patterns for the NEA, because a list of adopted products was not maintained for this project.

** Some sites made more than one adoption. In these cases, each adoption was counted separately.

***This does not include 43 adoptions for which no information was available regarding the product adopted.

Table 8

Product Adoption Patterns for Each RDU Project, by Spring 1979

Project	ADOPTIONS							
	Total	Assumed To Have Been Validated			Not Known To Have Been Validated			Percent Non-Validated
		Number from NIE Catalog (Validated)	Number from NDN Catalog	Number Through Local Validation*	Number from NIE Catalog (Not Validated)	Number Outside of Knowledge Base**	Number Without Local Validation**	
Florida	22	4	1	--	--	--	17	77.3
Pennsylvania	13	--	9	3	--	1	--	7.7
NRC	45	4	5	6	--	30	--	66.7
Michigan	63	--	9	--	3	3	48	85.7
Georgia	24	1	5	--	1	4	13	75.0
Network	27	6	18	3	--	--	--	0.0
NEA	?	?	?	--	?	?	?	?
Total	194	15	47	12	4	38***	78	61.9

*Each of the projects with a local validation procedure was arbitrarily assumed to have properly used it, leading to a more conservative estimate of the overall proportion of nonvalidated products. The single exception is Michigan, where it was known that most products did not go through the local validation procedure.

**Some of these may have been validated through an alternative procedure (e.g., by the commercial publisher). The extent of this phenomenon is not known.

***Three products that were outside the knowledge base were nevertheless NIE or NDN products. These three products were, therefore, assigned to the NIE or NDN columns in this table.

procedure may be considered nonvalidated. This assumption holds even though a few products may have been validated through some other, undocumented have been validated through some other, undocumented procedure). Based on this assumption, this approach suggests that up to 60 percent of the adoptions could have involved nonvalidated products.

Finally, a secondary analysis of data available from schools that had been visited by either RDU project or Abt Associates research staff members indicates that only 64 percent were known to have adopted a product that had been systematically field tested. The field testing did not have to meet any empirical standards, and was simply an attempt to install the product in a site or sites and determine whether it was useable.

These different approaches yield estimates that indicate that by the spring of 1979, many of the adoptions involved nonvalidated and even non-field-tested products. Although these are necessarily imprecise figures, the results are based on conservative assumptions. For instance, the final estimates exclude the NEA project, where it is known that the great bulk of the adoptions involved nonvalidated products.

CHAPTER IV

DELIVERING EDUCATIONAL PRODUCTS TO SCHOOLS: CONCLUSIONS AND FUTURE PROSPECTS

The preceding chapters have described the processes by which validated products were eventually adopted (or not adopted) by the school sites within the RDU program. We have attempted to show that a good portion of nonvalidated products eventually made their way into the knowledge bases of several of the RDU projects (Georgia, Michigan, and NEA), and that this pattern was continued at the site level in these and in the NRC and Florida projects, where many of the adopted products were not even in the original knowledge base. This transition from validated to nonvalidated products occurred in spite of the original RDU mandate as represented in the original RFP and the substantial efforts made by each of the seven projects to develop a responsive knowledge base.

Three sets of issues deserve further discussion, in part to explain these findings and in part to suggest future concerns for researchers and educational policy makers:

- the adequacy of the pool of educational products;
- the need for operational definitions in the design of programs; and
- the need to understand the normal process of "slippage" between program intent and program implementation.

The Need for More Educational Products

Whatever else may be suggested by the difficulties of assembling a knowledge base, it is clear that the pool of acceptable educational products needs to be expanded in the future. On certain topics, little R&D had been done at the time the RDU projects were in operation. These topics include: career education (interest in which only burgeoned in the early 1970s, not allowing enough time to produce a wide variety of relevant, validated products for the RDU program in 1976); district- or school-wide planning (which was added by the Georgia project); inservice training.* In principle, the last topic would have been feasible had it been limited to the few curriculum areas in which a large number of validated products existed. However, the inservice topic was

* There is also some question of how to validate educational products on these topics, where more reliance must necessarily be placed on affective ratings, such as attitude scales. Additional problems confront the validation of products that only indirectly affect students--e.g., inservice products.

broadly applied to almost every curriculum area that could be of interest to a site, and thus stretched beyond the reservoir of available products.

On other topics, the need for products was only recognized in the course of the RDU program. These included almost any curriculum area at the secondary school level, especially on core topics such as reading. Similarly, RDU officials who were interviewed indicated that sites frequently sought products on topics outside of the basic skills--e.g., science, language, and social studies--but encountered great difficulty in finding them. Lastly, there appeared to be a need for assistance on topics related to racial integration and the problems of minority groups (e.g., products for bilingual students), and the available pool of products again seemed sparse.

In expanding the pool of educational products in the future, it should be noted that important contributions can be made from two sources. Traditionally, one source has been the result of R&D efforts, in which new products are developed by using scientifically based information in an institution or university department that is devoted to knowledge production activities.* R&D efforts are not, however, the only source of new knowledge that may bear upon the improvement of schools and schooling: there is also practice-based knowledge, which is based upon practitioners' own experiences. A variety of local or federal programs have been targeted toward the knowledge development activities of practitioners. These activities can produce measurable improvement, and might be called "P&D" activities (practice and development).

Whatever the source of new knowledge, however, any acceptable education product must be validated by a process which involves formal certification of impact and transportability. Typically, the validation process involves a quantitative experimental or quasi-experimental evaluation, providing

* Despite the fact that the use of R&D products was a major initial objective of the R&D program, considerable ambiguity exists concerning the meaning of "R&D products". The ideas for many educational products come from ordinary knowledge or from the experience of practitioners. This is true both for so called "exemplary practice" and for many products produced by R&D organizations. These may be excellent products, but from a "purist" perspective they are not research and development products. From this perspective, to qualify as an R&D product, the product design would have to be based on the result of prior research and development or propositions in systematic theory preferably both. Similarly if the product design was derived from a research or theoretical basis, then it might be considered an "R&D product" even though the final development of the product lacked an empirical validation step.

information about differences in test scores between groups that did and did not receive the "treatment." These results are then reviewed by a formally constituted group such as the OE/NIE Joint Dissemination Review Panel. Thus, quantitatively based validation procedures should probably be viewed as one type of minimal screen through which a proposed educational product must pass before it is deemed worthy of dissemination.

If knowledge source and validation status are considered two independent dimensions, a two-by-two matrix may be created and is shown in Figure 3. This matrix illustrates the proposition that future products may come from R&D or P&D efforts, but that the validation procedure must be applied to products from either type of effort in order for a product to be acceptable.

Along with the development of a larger pool of products, future efforts are also needed to identify the product characteristics that facilitate implementation. For instance, interviews with project staff members and school personnel provided considerable anecdotal evidence regarding what makes an attractive product. Such products had the advantage of:

- multiple adoptions in recent years, which frequently meant that there was a proximate school which could be visited for observational purposes;
- experienced trainers, who were funded through federal programs such as NDN to provide both pre-implementation and follow-up service to adopting schools; and
- well-packaged and easily available materials, usually provided at, or under, reproduction costs.

In contrast, less attractive products were more likely to have been adopted in few places, to have had no experienced available trainers or to require consultant fees for training, and in some cases to have had materials that were not as attractively produced. Only further research can demonstrate the importance of these types of characteristics in contrast to those having to do with the content of the product.

The Need for Clearer Definitions

A second potential lesson from the sites' experiences with products is that clearer operational definitions need to be made in the design of a program. Thus, we noted in Chapter I that the RFP did not describe the minimal validation procedure. If a product did not come from the pool of nationally validated products, what was an RDU project to do? Four of the seven projects

Figure 3

TYPES OF EDUCATIONAL PRODUCTS BY
SOURCE AND VALIDATION STATUS

	Source of Product	
Type of Certification	Research and Development (R&D) Effort	Practice and Development (P&D) Effort
Validated (Formal Certification of Impact & Transportability)	Acceptable Product	Acceptable Product
Not Validated	Unacceptable Product	Unacceptable Product

relied on a review panel procedure.* During the review process, if data were not available on a certain product from some existing test, time was needed for the collection of those data. To our knowledge, the RDU program was not designed to allow for this time lag; and, if a site wished to adopt a non-validated product, no separate attempt was made to conduct an empirical validation of the product's impact. Other approaches to product certification--including judgments of face validity by experts, or judgments of actual impact by practitioners using non-test measures--were used to an unknown extent in the RDU program.

Other operational details were also unanticipated by the designers of the RDU program. How large does an adequate knowledge base need to be? How often should it be updated? What feedback is possible so that site experiences can be incorporated into the knowledge base? These and other questions might have been more easily resolved had there been, at the time of the design of the RDU program, a national knowledge base with these operating experiences. Even now, the existence of a single knowledge base might reduce the problems of searching for and documenting accessible and acceptable products that may be included in local knowledge bases. At a national level, some economies of scale might be achieved, and greater resources might therefore be made available for both locating and screening products. However, a national knowledge base alone, in the absence of local knowledge bases, might also have some disadvantages. It might not be sufficiently responsive to local site needs, a concern which was expressed by the RDU project staffs when asked about this issue. The typical fear was that a national knowledge base which was far removed from the locus of implementation would be unable to respond in a timely or fine-tuned manner. In addition, local knowledge bases would allow sites to have a more intimate involvement in the product selection process, with face-to-face visits frequently used to review candidate products; a national knowledge base might not provide the same opportunities. These advantages and disadvantages would

* The product review panels, except in the case of the NRC, existed before the RDU program. Knowledge-base staff did not submit candidate products to the panels in order for them to be validated for their RDU projects. Rather, for those projects whose states had an existing validation procedure (Pennsylvania, The NETWORK, and Michigan), the knowledge-base staff considered products that had already been validated by the panels as potential knowledge-base products.

all have to be taken into account in the planning for any national knowledge base.

Normal Shifts between Intent and Implementation

A final set of explanations and implications derives from our observation that the RDU program was designed with a purposeful tension. On the one hand, the goal of using existing R&D products can be construed as a technology-oriented objective. On the other hand, the RDU program also called for sites to conduct their own needs assessments before seeking a product, and this can be construed as a user-oriented objective. In reality, these two objectives can co-exist best when adequate time--usually a moderate period of years--is allowed for the knowledge development and needs assessment activities to inform one another. Unmet site needs, for instance, should lead to the commissioning of new product development. Because the RDU program was not a long-term program, the tension between the two objectives had to be settled in other ways, and our belief is that these compromises explain the transition from validated to nonvalidated products. Moreover, such shifts between intent and implementation can occur throughout the life of a federal program.

Federal programs intended to affect local practices may be said to have five phases (not necessarily occurring in simple linear order):*

- federal policy development
- federal program development
- project design
- site or service delivery development
- practice implementation

Figure 4 shows how these phases may be depicted with regard to the RDU program. This model suggests that implementation at one phase frequently becomes a major component of the set of plans or intentions at the next phase. Intent at each phase is usually embodied in a set of goals or objectives. As a result of either conscious or serendipitous choices in the implementation of each phase, activities are set in motion that are believed to address the goals that were developed. However, in most implementation efforts,

* There is considerable literature that provides useful background information for this topic. For example, see Berman, 1978; Farrar et al., 1979; Hage and Aiken, 1970; Louis, 1980; McLaughlin and Berman, 1975; and March and Olsen, 1976. The term "slippage" was originally used by Philip D. Selznik (see Corwin, forthcoming).

Figure 4

FIVE PHASES IN THE IMPLEMENTATION OF
A FEDERAL PROGRAM INTENDED TO AFFECT LOCAL PRACTICE

POLICY DEVELOPMENT PHASE

Intent	Implementation
- Congressional legislation - Federal regulations	- Design of RDU program, primarily reflected in RFP

PROGRAM DEVELOPMENT PHASE

Intent	Implementation
- Design of RDU program by NIE, primarily reflected in RFP	- Design of seven project awards, based on project proposals - Monitoring of awards

PROJECT DESIGN PHASE

Intent	Implementation
- Design of individual project, based on project proposal - NIE monitoring of award	- Actual project organization - Actual project procedures

SITE DEVELOPMENT PHASE

Intent	Implementation
- Actual project organization - Actual project procedures	- Adoption of specific idea (R&D product) for implementation

PRACTICE IMPLEMENTATION PHASE

Intent	Implementation
- Adoption of specific idea (R&D product) for implementation	- Implementation of new practice

many choices must be made, both quickly and in the absence of complete and sound information, about the consequences that the choices may have for meeting the objectives that were intended. This basic phenomenon of decision making under conditions of uncertainty has long been acknowledged by students of public administration (Lindbloom, 1959; March and Olsen, 1976; Pressman and Wildavsky, 1973; Bailey and Mosher, 1968; Murphy, 1971). The incremental decisions made by administrators during program implementation result in subtle but concrete changes in the program--changes that, over time, often involve substantial evolution away from the original design and intent. Among the many terms used to describe this process, that of "mutual adaptaton" (Berman and McLaughlin, 1977) has appealed most broadly to educational researchers and policy makers. This term is, however, frequently applied with imprecision, and it is important to define the process of incremental change more concretely.

According to Corwin (1980) there are four types of adjustment between the project-as-intended and the "real world." These may be classified according to:

- the type of decision (planned or deliberate, versus unplanned or inadvertant); and
- the type of motivation for the decision (to overcome obstacles in implementation versus the need to correct for inadequacies or ambiguities in program design).

A cross tabulation of these produces four types, which are shown in Figure 5.

Mutual adjustment refers to the outcomes of decisions that involve deliberate consideration of the changes to be made. This planned change will involve some alterations in the program, and some expectation of changes in the setting in which it is implemented (Berman and McLaughlin, 1977). Using the matrix in Figure 5, we find two sub-types of mutual adaptation:

- Revision. This occurs as the program is tested in the field, and problems of implementing it as planned are encountered. Decisions are then made about how best to approximate the original intent under conditions of reality, and how to adjust the local setting to accept the intent.
- Specification. Program designs are usually skeletal, and must be fleshed out during implementation. Policies are continuously developed to reflect accumulating information about how the program operates.

Figure 5

Types of Change Between Intent and Implementation

Type of Motivation	TYPE OF DECISION: Planned (mutual adaptation)	TYPE OF DECISION: Inadvertent (slippage)
Obstacles in Field	Revision	Accomodation
Design Ambiguities	Specification	Mutation

The outcomes of inadvertant or unplanned decision making, on the other hand, may be better thought of as slippage. In the case of slippage, we may find changes both in the program and the setting, but we also find instances in which only the program changes. Slippage may be good or bad (although from the rational administrative perspective, it is clearly preferable to make planful decisions where possible), but it is also unavoidable as the press of responsibilities and the need to find rapid closure for day-to-day problems occurs. There are two sub-types of inadvertant decision making:

- Accomodation. Accomodation occurs due to administrative resistance or demands from the client or other actors in the environment. When and where there are "exceptions to the rule," or where decisions are made to alter rules in order to achieve a valued goal more quickly, the program has a tendency to be altered more than the client or environment.
- Mutation. Unpredictable local interpretations of the original program design are frequently encountered in the implementation of new programs. These usually occur because the implementing individual(s) did not fully understand what the designers wanted, but also occur as a consequence of localized "insights," which involve the generation of new goals or strategies which seem, to the implementor, to add to the original design.

The development of the design and policies governing the use of "knowledge" in the R&D Utilization program gave evidence of several types of change through incremental decision making. The changes that occurred in the policy and program development phases may, according to Corwin's (1980) analysis, best be classified as mutual adaptation, because they revolved primarily around well-planned changes in design to reflect the absence of nationally developed product pools that met the desires of NIE to test an R&D Utilization strategy. The outcomes of the process of change that has been documented in this report, on the other hand, can be considered to be slippage, both through accomodation to the absence of appropriate products for the data bases and client demands, and mutation, as several of the projects spontaneously converted to a greater emphasis upon the dissemination of improved problem solving capabilities, as opposed to R&D.

In the RDU program the "slippage" from validated to nonvalidated products mainly occurred at two phases of the five-phase model. During the project design phase, the intended activity was the development of a knowledge base (or pool) of validated products. Chapter II described how this

function was conducted by each of the seven projects and showed how this involved accomodation in each project to available resources. At the site development phase, the pertinent activity was the matching process, whereby sites had to match their needs to the products available before making a final adoption. This activity again led to considerable accomodation and was described fully in Chapter III.

We believe that slippage can be attributed to the tension between the technology-oriented and user-oriented objectives of the RDU program. In the original RFP, the technology-oriented elements of the program were dominant. Portions of the RFP clearly indicated that improvements in the problem-solving process used by schools were also desirable, but these aspects were not as prominent as the implementation of R&D products. During implementation, the balance between the technology-oriented and user-oriented elements of the program shifted, such that by the time the RDU program had been in operation for a year-and-a-half, it was clear that some projects were emphasizing improvement in a local problem-solving capacity (user-oriented objective) over the use of R&D products as their major accomplishment. By the end of two years, there was apparent consensus among the seven project directors on the primacy of the user-oriented objectives.*

To summarize, the transformation of the original intent into a new set of intents is a pattern which characterizes many organizational and program histories. Such changes, deserve to be the focus of further research, especially in light of the following observation. Previous research on federal-local implementation** has repeatedly suggested that little beneficial influence can be exerted by federal policies at the fifth phase in our model, what we have called the practice implementation phase.*** The outcomes of local implementation appear to be more a function of local conditions, such as the local agency organization, rules of governance, and personnel. For this reason, the existing research has shown little, if any, cross-site correlation between the availability of federal resources and local implementation outcomes (Yin et al., 1977; Berman and McLaughlin, 1978; Miles, Fullan, and Taylor, 1979). This weak relationship has continually thwarted federal

---

* This conclusion is based upon observations of a meeting of the seven project directors and several NIE staff members held in October 1978.

** For example, see Yin et al., 1977; Lambright and Flynn, 1977; Berman and McLaughlin, 1978; and Rosenblum and Louis, 1979.

***For a discussion of the disincentives of federal policies at this stage, see Sieber, 1979.

agencies whose mission is to create change and thereby improve services at the local level. Federal policies may, however, significantly influence implementation activities at the other four phases in our model, which in turn can constrain or enhance local adoption behavior. For those who support the federal agenda, the assumption is that services might then be more likely to change, even if moderate adaptation takes place during the fifth phase. For those who support the local agenda, knowledge about the slippage and mutual adaptation process could help to alter plans at one of the earlier four phases. Thus, any new information on changes between intent to implementation can potentially yield policy-relevant recommendations for both federal and local agencies.

Summary

The R&D Utilization (RDU) program was designed by NIE to improve school practices. Such improvements were to occur, in part, as a result of the adoption and implementation of specific R&D "products"--i.e., ideas curriculum changes based on previous research and testing. Thus, the organization of the RDU program involved the presentation, to each participating school, of an array of potential products for review and selection by the school staff.

This report has described the administrative process whereby:

- information about existing products was accumulated into a "knowledge base;"
- the materials in the knowledge base were made available to school sites;
- the school sites were assisted in selecting the product that most suited their needs; and
- specific products were finally adopted by each school.

A major issue throughout this process had to do with the desire to have schools adopt only products that had been previously validated through empirical testing. Thus, the intent of the RDU program was to assure some quality control over the new ideas that would be implemented within any given school.

In reviewing each of the major steps in the process, this report has identified difficulties that were encountered in fulfilling the program's mandate. The analysis shows that, in spite of the substantial efforts made to assure quality control, many school sites ultimately adopted products that had not been validated for their effectiveness or transportability through prior testing. In fact, up to 50 or 60 percent of the final adoptions may have involved nonvalidated products.

The above analysis points to a number of implications for the individual who must develop and manage pools of educational products. One generic lesson is that the design and implementation of quality control procedures for dissemination should be regarded as a two-stage process. The first stage centers on determining which information bits, programs, or other knowledge should be included in the pool, and the second occurs as the client decides what information to use. A dissemination program can influence both steps, but different procedures must be designed for each stage.

Second, the experiences of the RDU projects suggest that the implementation of strict quality control procedures is extremely difficult where the dissemination program seeks to maximize responsiveness to client needs. The higher the client orientation of the dissemination program, the more important it is that backup screening procedures be developed for use when clients require information that cannot be found within the more rigorously screened pool. Without such backup procedures, the project staff may lose all control over quality at various crucial stages of its relationship with a client school or district.

Finally, while the attention devoted to quality control was appropriate in the RDU program, given its research focus, we believe that ongoing projects would be well advised to utilize more flexible criteria for quality control. Thus, for example, a project might develop a three-tiered ranking system for all of its "knowledge." Where a need could be met through research-based, validated products, these would be given highest priority. However, products that had been field tested (but not validated) and products that simply met criteria of strong face validity would also be available through the retrieval system. There is some evidence from other analysis in our study that quality control is important,* there is also evidence that many schools might have become discouraged and might have abandoned the program improvement effort entirely if they had been forced to choose only from a limited knowledge pool.

The results also suggest several potential concerns for future educational policymaking. First, the existing pool of acceptable products may not have been large enough, at the outset, to serve the varied needs of the sites. In some curriculum areas, such as career education and other topics outside of the basic skills, there were simply too few products from which to choose. A future need may therefore be the development of a larger and broader array of R&D products to match the types of problems frequently encountered by schools. Second, clearer operational guidance may be needed for establishing an appropriate knowledge base. Among the key steps is the implementation of specific validation procedures to certify new products that

* For example, whether or not an adopted product has been field tested strongly predicts the degree to which it affects the school and its pupils and staff (Louis, 1980).

may emerge in the course of an educational change program. In the case of RDU, such procedures were called for and used, but the design of the program did not allow for the time lag needed to accumulate new empirical evidence before a school could proceed with adoption. Third, the RDU experience raises some general questions about the likely slippage that will occur, from intent to implementation, throughout all phases of a federally-designed program. Future programs should make a better attempt to anticipate this slippage process.

Overall, these concerns in implementing school change through federal intervention are important not only to the RDU program but also to other federal programs in education. The issues raised should therefore be compared with the lessons learned from other federal programs, in the hope of improving the design of future programs.

REFERENCES

Marvin Alkin, Richard Daillak, Peter White, Using Evaluations: Does Evaluation Make a Difference? Beverly Hills, CA: Sage Publications, 1979.

Stephen K. Bailey and Edith Mosher. ESEA: The Office of Education Administers a Law. Syracuse, NY: Syracuse University Press, 1968.

Paul Berman, "The Study of Macro- and Micro-Implementation," Public Policy, Spring 1978, 26:157-184.

Paul Berman, Toward an Implementation Paradigm of Educational Change, forthcoming.

Paul Berman and Milbrey McLaughlin, Federal Programs Supporting Educational Change (Santa Monica, CA.: Rand Corporation, May 1978, R-1589/8).

Peggy Campeau, et al., Final Report: Evaluation of Project Information Package on Dissemination and Implementation, Palo Alto, CA: American Institutes for Research, 1979.

Catalog of NIE Education Products, National Institute of Education, Washington, D.C., 1975.

Kent J. Chabotar and Diane G. Kell, Linking R&D with Schools: An NIE Program and its Policy Context (Cambridge, Mass.: Abt Associates, 1978).

Ronald Corwin, The Role of NIE in the R&D Utilization Program, forthcoming, 1980.

Richard A. Dershimer, The Federal Government and Educational R&D (Lexington: Lexington Books, 1976).

Far West Lab, Educational Programs That Work, U.S. Office of Education, HEW, Washington, D.C., Fall, 1978.

Eleanor Farrar, John Desanctis and David Cohen, Views from Below: Implementation Research in Education, Huron Institute, Cambridge, MA, 1979.

Michael Fullan and Alan Pomfret, "Research on Curriculum and Instruction Implementation, Review of Educational Research, 47, 1, 1977: 334-397.

Jerald Hage and Michael Aiken, Social Change in Complex Organizations, (NY: Random House, 1970).

House Report 92-554, Washington, D.C., 1971.

W. Henry Lambright and Paul J. Flynn, "Bureaucratic Politics and Technological Change in Local Government," Journal of Urban Analysis, 1977, 4:93-118.

Charles Lindblom, "The Science of Muddling Through," Public Administration Review, 19, (Spring, 1959), 74-88.

REFERENCES (continued)

Charles Lindblom and David Cohen, Usable Knowledge, New Haven: Yale University Press, 1979.

R. Lippitt and R. Fox, in: Louis Rubin (Ed.), Improving Inservice Education: Proposal and Procedures for Change, Boston: Allyn and Bacon, Inc., 1971.

Karen Seashore Louis, The Role of External Agents in Knowledge Utilization Problem Solving and Implementation of New Programs in Local School Contexts, 1980.

Karen Seashore Louis. "Linking R&D With Schools. Product and Process: Some Preliminary Findings From the R&D Utilization Program". Paper presented at the 1980 AERA conference in Boston.

Karen Seashore Louis, et al., Linking R&D With Schools: An Interim Report (Cambridge, Mass.: Abt Associates, 1979).

Karen Seashore Louis, Sheila Rosenblum, Robert Yin and Gregory Spencer. Managing Organizational Networks. Cambridge, MA: Abt Associates Inc. Forthcoming.

Robert A. Luke. "How To Plan a Teacher-Centered Inservice Education Program," National Education Association, Washington, D.C., March 21, 1979, Draft.

James G. March and John Olsen, Ambiguity and Organizational Choice, Bergan, Norway: Universitetsforlaget, 1976.

Milbrey McLaughlin and Paul Berman, Macro- and Micro-Implementation (Santa Monica, Calif.: Rand Corporation, May 1975, P-5431).

Matthew Miles, Michael Fullan and Gib Taylor, OD in Schools, Vol. III: OD Consultants/OD Programs in School Districts, Toronto: Ontario Institute of Studies in Education, 1978.

Jerome T. Murphy. "Title I of ESEA: The Politics of Implementing Educational Reform." Harvard Educational Review, Vol. 41, 1971, pp. 31-73.

Catalog of NIE Education Products, National Institute of Education, Washington, D.C., 1975.

National Institute of Education, "Research and Development Utilization: "Request for Proposal," Washington, D.C., December 1975.

National Institute of Education, Summary of the Reorganization Plan, Washington, D.C., 1978.

Panel for the Review of Laboratory and Center Operations, R&D Centers and Regional Educational Laboratories, National Institute of Education, Washington, D.C., Jan. 1979.

REFERENCES (concluded)

Jeffrey L. Pressman and Aaron B. Wildavsky. Implementation. University of California Press., 1973.

Senta Raizen, "Dissemination Programs at the National Institute of Education," Knowledge: Creation, Diffusion, Utilization, 1, 2, December 1979: 259-292

J. David Roessner, "Federal Technology Policy: Innovation and Problem Solving in State and Local Governments," Policy Analysis, Spring 1979, 5:182-200.

Sheila Rosenblum and Karen Seashore Louis, Stability and Change: Planned Change in Ten Rural School Districts, Abt Associates Inc., Cambridge, MA, 1979.

Sam Sieber, Incentives and Disincentives for Knowledge Utilization in Public Education, 1979.

U.S. Office of Education and the National Institute of Education, The Joint Dissemination Review Panel Ideabook, Washington, D.C., October 1977.

Carol Weiss, "Research for Policy's Sake: The Enlightment Function of Social Research," Policy Analysis 1977 3: 531-545.

Robert K. Yin, Changing Urban Bureaucracies: How New Practices Become Routinized (Lexington, MA: Lexington Books, 1979).

Robert K. Yin, "Contemporary Issues in Domestic Technology Transfer," in Domestic Technology Transfer: Issues and Options, Committee on Science and Technology, U.S. House of Representatives, 95th Congress, 2d Session, November 1978 (Volume I), pp. 3-40.

Robert K. Yin, R&D Utilization by Local Services: Problems and Proposals for Further Research (Santa Monica, Calif.: Rand Corporation, December 1976).

Robert K. Yin et al., Tinkering with the System: Technological Innovations in State and Local Services (Lexington, MA: Lexington Books, 1977).